United States Department of the Interior

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Log No. 2000-R3-MISO-1

September 7, 2000

Mr. Peter J. Frantz
Chief of Environment
Illinois Dept. of Transportation
2300 South Dirksen Parkway
Springfield, Illinois 62764

Dear Mr. Frantz:

This document transmits the Fish and Wildlife Service's (Service) biological opinion based on our review of the proposed Illinois Department of Transportation, (IDOT) New Mississippi River Crossing (FA 999) and Illinois Route 3 Realignment (FAP 14) located in St. Clair and Madison Counties, Illinois, and the effects on the threatened decurrent false aster (*Boltonia decurrens*) in accordance with Section 7 of the Endangered Species Act of 1973, as amended (ESA) (16 U.S.C. 1531 et seq.). Your February 9, 2000, request for formal consultation was received on February 11, 2000. Although this consultation is being conducted with the IDOT, the Federal Highway Administration (FHWA) is the federal action agency. Therefore, we are notifying the FHWA of the results of this consultation by copy of this letter.

This biological opinion is based on information provided in the February 9, 2000, biological assessment, additional information provided April 26, 2000, the April 2000 Draft Environmental Impact Statement for FA 999 and other sources of information. A complete administrative record of this consultation is on file at this office.

We have also reviewed the additional information provided to this office in a letter dated April 26, 2000, concerning the endangered Illinois cave amphipod (*Gammarus acherondytes*) and pallid sturgeon (*Scaphirhynchus albus*). Based on the information provided, we concur that the proposed activity is not likely to adversely affect these species.

CONSULTATION HISTORY

The Service received the biological resources review for FAP 14 by copy of a memorandum dated October 11, 1994. The Service's November 7, 1994, response identified the need for a survey for *B. decurrens* due to the presence of potential habitat. Subsequently, a survey was conducted in 1997 and several colonies of *B. decurrens* were found to occur in the project corridor.

The Service received the biological resources review for FA 999 by copy of a memorandum dated November 5, 1997. That document transmitted the results of botanical surveys conducted at the project site. Those surveys indicated colonies of the threatened *B. decurrens* occur in the project corridor. In a letter dated December 4, 1997, the Service recommended preparation of a biological assessment and initiation of formal consultation to address impacts to the *B. decurrens.*

This office received the request to initiate formal consultation for both projects via a letter dated February 9, 2000, which transmitted the biological assessment. The Service confirmed receipt of this letter and provided a consultation log number in a letter dated March 14, 2000.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The action area for this analysis is the FA 999 New Mississippi River Crossing study corridor which extends from St. Clair County, Illinois, to St. Louis, Missouri, and the FAP 14 Illinois Route 3 study corridor in Madison and St. Clair Counties, Illinois. The FA 999 area consists of fifteen cover types and includes 1519 acres (IDOT 2000). The FAP 14 area consists of thirteen cover types and includes 1518 acres (IDOT 2000).

The first action is the construction of a new Mississippi River Crossing from I-55/70 in St. Clair County, Illinois to 14th Street in St. Louis, Missouri. The project length is 8.05 km (5.0 miles) and will be on new right-of-way. The purpose of the development of a new Mississippi River Crossing is to respond to growing peak-period traffic congestion across the river in the downtown St. Louis area. The preferred alignment for the new river bridge is on the north side of downtown St. Louis.

The second action involves realignment of Illinois Route 3 through the construction of a multi-lane highway at a new location to replace the current outmoded highway. Its purpose is to provide continuity for Route 3 separate from the interstate system and to open lands within the corridor to development. The project length is 8.80 km (5.5 miles) and approximately 25.1 ha (62 acres) of additional right-of-way will be required.

STATUS OF THE SPECIES

This section presents the biological or ecological information relevant to formulating the biological opinion. Appropriate information on the species' life history, its habitat and distribution, and other data on factors necessary to its survival, is included to provide background for analysis in later sections. This analysis documents the effects of all past human and natural activities or events that have led to the current status of the species. This information is presented in listing documents, the recovery plan (USFWS 1990), the biological assessment prepared for the

proposed activities (IDOT 2000) and a biological assessment prepared by the Corps of Engineers for continued operation and maintenance of the nine-foot channel project (USACE 1999).

B. decurrens was listed as a threatened species by the Service on November 14, 1988 (53 FR 45861). It is a floodplain species that occurs along a 250 mile section of the lower Illinois River and nearby parts of the Upper Mississippi River (Schwegman and Nyboer 1985, USFWS 1990). *B. decurrens* is an early successional species that requires either natural or human disturbance to create and maintain suitable habitat. Its natural habitat is wet prairies, shallow marshes, and shores of open rivers, creeks, and lakes (Schwegman and Nyboer 1985). In the past, the annual flood/drought cycle of the Illinois River provided the natural disturbance required by this species. Annual spring flooding created open, well-lit habitat and reduced competition by killing other less flood-tolerant, early successional species. Field observations indicate that in "weedy" areas without disturbance, the species is eliminated by competition within three to five years (USFWS 1990).

Smith *et al.* (1998) found that populations of *B. decurrens* increased in size at three sites studied on the Illinois River following the flood of 1993, with the greatest increase occurring at the two sites which had the most severe flooding. These results suggest that the removal of competing species by flood waters may be an important factor in maintaining populations of *B. decurrens* in the floodplain. *B. decurrens* has high light requirements for growth and achene germination (Smith *et al.* 1993, Smith *et al.* 1995), and shading from other vegetation is thought to contribute to its decline in undisturbed areas.

B. decurrens exhibits a number of morphological adaptations for life on the floodplain. Stoecker *et al.* (1995) found *B. decurrens* to be extremely tolerant when maintained under conditions of root zone saturation. All plants in the flood treatment replicate survived to the end of the study at 56 days. The formation of aerenchyma, a common plant adaptation to flooding which allows diffusion of oxygen from aerial shoots to maintain root metabolism, was extensive, increasing in adventitious roots from 26% of root cross-section area in non-flooded plants to 49% in flooded plants (Stoecker *et al.* 1995). Achenes of *B. decurrens* are morphologically structured for flotation and, therefore, presumably are adapted for dispersal on river currents. Smith and Keevin (1998) found that germination was not significantly reduced in achenes floated for four weeks, and 20% of achenes floated under conditions of simulated wave action were still floating after four weeks. These data indicate that achenes have the potential for long distance dispersal on water.

Smith and Keevin (1998) found that achenes of *B. decurrens* will not germinate in the dark. Achenes, which were covered with as little as 0.2 inches of sediment, did not germinate; therefore, if achenes are deposited by flood water and subsequently covered by a shallow layer of sediment, it is unlikely they will germinate. Natural or human disturbance of the soil, exposing the achenes to light, would be required for germination. Sediment type may also be an important

factor in achene germination and long-term survival of populations. *B. decurrens* has been observed growing on a variety of soil types (Schwegman and Nyboer 1985, Smith 1991); however, laboratory studies (Smith et al. 1995) comparing achene germination and growth on two soil types, silty clay (6.7% sand, 53.3% silt, and 40% clay) and loamy sand (80% sand, 16.7% silt and 3.3% clay) indicate that germination and seedling growth were significantly greater on sand than on clay. These laboratory results suggest that the silt and clay sediment being deposited by flood events on the Illinois River (Lee and Stall 1976) is not ideal for germination and growth. Soil type may thus be important in determining the distribution pattern of this species.

B. decurrens reproduces vegetatively and sexually. Vegetative production of one or more basal rosettes occurs during the fall. Rosettes bolt the following spring; plants flower and set achenes from late August to early October. Field monitoring by Schwegman and Nyboer (1985) suggested prolific achene production. *B. decurrens* produces about 50,000 achenes per individual, and, based on achene viability, an average plant is capable of producing about 40,000 seedlings under optimal conditions for germination (Smith and Keevin 1998). Fall seedlings overwinter and bolt and flower the following spring and summer. Spring seedlings, however, may either bolt and flower the same year or overwinter as small rosettes which bolt and flower the following year (Smith 1991). In areas where seedling production is low or nonexistent, *B. decurrens* populations can be maintained by basal rosette production. In fact, few seedlings are found in established populations (Moss 1997, Smith 1991). Seedling establishment is expected to be low due to the small achene size, the high light and temperature requirements for germination, and specific soil texture and microtopography requirements for germination and seedling growth (Baskin and Baskin 1988, Smith *et al.* 1995).

Analysis of 19th century habitat data taken from herbarium sheets indicates that *B. decurrens'* natural habitat was the shores of lakes and streams in the Illinois River floodplain and the Mississippi River floodplain in the vicinity of its confluence with the Illinois River. It ranged along a 250 mile stretch between LaSalle, Illinois and St. Louis, Missouri. A disjunct population at Cape Girardeau, Missouri, was reported in 1976, 120 miles downstream of St. Louis (Schwegman and Nyboer 1985), but it has not been found since.

The present distribution of the aster is essentially unchanged. Determining a total population for the species is difficult because individual populations may change dramatically from year to year; some increasing, some decreasing, new ones appearing and old ones disappearing depending on site conditions. Several notable populations include Riverlands Environmental Demonstration Area, Spatterdock Bottoms and Columbia Bottoms in St. Charles County, Missouri; Rice Lake in Fulton County, and Worley Lake in Tazewell County, Illinois (Dr. Marian Smith, Southern Illinois University at Edwardsville, *in litt.* to Gerry Bade December 4, 1999; *ibid.* January 28, 2000); and the American Bottoms in Madison and St. Clair Counties, Illinois (IDOT 2000).

In spite of the above, the species is considered to be stable (Dr. Marian Smith, Southern Illinois University at Edwardsville, *in litt.* to Gerry Bade December 4, 1999). The Recovery Plan states that the species will be considered recovered after 12 stable populations have been protected by purchase, easement or cooperative management agreement. The species is considered to be about 75% recovered at this time (Dr. Marion Smith, Southern Illinois University at Edwardsville, *in litt.* to Gerry Bade December 4, 1999).

Habitat destruction and modification have been blamed for the decline of the species, particularly of natural marshes, wet prairies, and shoreline habitats. Wetlands have been drained and converted to other uses, heavy siltation has buried suitable habitats, and construction of levee systems have altered the flooding regimes necessary for reduction of competition and prevented the dispersal of seeds to potential habitat (USFWS 1990, Schwegman and Nyboer 1985, Smith *et al.* 1993, Stoecker *et al.* 1995, Smith *et al.* 1998, Smith and Keevin 1998).

ENVIRONMENTAL BASELINE

This section is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat, and ecosystem within the action area. The purpose is to analyze the effects on the species at the action level. Factors affecting the species include habitat destruction and degradation due to water level regulation, impoundment, channel maintenance, and wetland and shoreline development.

Status of the Species in the Action Area

Four separate colonies ranging from 185 plants to an estimated population size greater than 10,000 individuals were observed in the FA 999 New Mississippi River Crossing project corridor. All four colonies occur in fields that appear to have a history of cultivation or other severe disturbances. Three colonies were confined to moist depressions that may have been less frequently cultivated. These colonies occur within the American Bottoms on soils derived from alluvial deposits. Associated soils include the Darwin Variant silty clay loam and Gorham silty clay loam. These soils developed under a cover of bottomland trees and grasses and thus the natural regional habitats may have included wet to wet-mesic savanna (Taft 1996). [Excerpt from IDOT 2000]

The proposed realignment of Illinois Route 3 north of I-70/I-55 passes through one of the greatest concentrations of *B. decurrens* colonies known to exist. A total of 17 colonies and colony clusters occur within a mile of the proposed realignment of Route 3. Most of these colonies occur further than 100 m from the proposed new Route 3 alignment. However, 10 colonies occur within a 600 m wide corridor centered on the proposed Route 3 realignment.

Several of the colonies observed in 1996-1997 that occur near the proposed realignment of Illinois Route 3 are in recently fallowed agricultural fields (Taft 1997). Observations made by Illinois Natural History Survey botanist, Dr. John Taft, of numerous colonies of *B. decurrens* at two general locations within its range during 1997 (Schuyler County and in the vicinity of the present St. Clair County project area) indicate that the recruitment, establishment, and growth conditions for this species during 1997 apparently was ideal (Taft 1997). [Excerpt from IDOT 2000]

Factors affecting the species' environment within the action area

A number of factors have affected the species' environment within the action area. Perhaps the most important is the large scale commercial and industrial development that has occurred in the American Bottoms. A racetrack and golf course constructed adjacent to the study area have impacted *B. decurrens* habitat (covering of habitat) and destroyed small populations of this plant. Such development not only reduces available habitat for *B. decurrens*, but also alters drainage patterns, thus affecting the dispersal of achenes.

Agricultural activities also affect habitat for *B. decurrens*. Rowcrop production may benefit the species by exposing achenes to sunlight, allowing germination. However, disking also likely destroys many plants.

EFFECTS OF THE ACTION

Four colonies of *B. decurrens* occur within the FA 999 study corridor. Ten colonies occur within the FAP 14 study corridor. Colony sizes vary greatly, ranging from small (5-10 plants) to very large (> 10,000 plants). Although conditions may change, it is likely that the proposed construction will destroy a number of *B. decurrens* plants. Potential habitat for this species is likely to be destroyed during construction. In addition, the proposed roadway improvements will likely alter local hydrology, thus affecting the dispersal of *B. decurrens* in the floodplain.

The proposed roadway improvement will also indirectly affect *B. decurrens* by encouraging commercial and industrial development in adjacent areas, thus further reducing available habitat and restricting the distribution of the species. For example, several areas near both projects are slated for development in the near future. These include long-term development plans for Gateway International Raceway and nearby golf course and the proposed National Stockyards re-development project in Fairmont City.

To compensate for these adverse effects, a conceptual mitigation plan for project impacts to decurrent false aster has been developed and will be implemented as part of the wetlands compensation plan. The mitigation is designed to foster continued species propagation in an area that has historically hosted this species (FHWA/IDOT 2000). The establishment of a large

population of decurrent false aster in an area that will remain in public ownership will be an overall benefit to the species.

CUMULATIVE EFFECTS

Cumulative effects include the effects of State, local or private actions that have occurred in the action area. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

Future infrastructure improvements by IDOT are likely to result in additional impacts to *B. decurrens*. However, the impacts of all proposed highway construction will be alleviated by mitigation measures to be implemented as part of the planned highway improvements (FHWA/IDOT 2000). Commercial and industrial development is also likely to continue in the area which will result in further loss of *B. decurrens* habitat and potential destruction of colony sites. Agricultural activities will continue in the area, but are likely to decline due to increased development pressure. Disking for rowcrop production may have either positive or negative effects to decurrent false aster.

CONCLUSION

After reviewing the current status of *B. decurrens*, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of the species. No critical habitat has been designated for this species, therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Sections 7(b)(4) and 7(o)(2) of the ESA do not apply to the incidental take of listed plant species. However, protection of listed plants is provided to the extent that ESA requires a Federal permit for removal or reduction to possession of endangered plants from areas under Federal jurisdiction, or for any act that would remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any regulation of any State or in the course of any violation of a State criminal trespass law.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. Reestablish populations of B. decurrens on all suitable wetland mitigation sites which may be located within the project vicinity.

2. As part of the mitigation plan for *B. decurrens*, implement a monitoring plan for a minimum of 5 years to determine if the established populations are stable or expanding.

3. Implement a monitoring program for the colonies of *B. decurrens* occurring in the project area, but which will not be affected by construction activities to determine if these populations are stable or expanding.

4. Obtain conservation easements on properties containing the largest concentrations of *B. decurrens* to protect these colonies from future development.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the proposed New Mississippi River Crossing (FA 999) and the Illinois Route 3 realignment (FAP 14) located in Madison and St. Clair Counties, Illinois, and outlined in your February 9, 2000, request for initiation of formal consultation. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat that was not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or designated critical habitat that may be affected by the action; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitation.

We appreciate the opportunity to work cooperatively with your staff to develop this biological opinion. Please contact me at 618/997-3344, ext. 340, should you have any questions.

Sincerely,

Joyce A. Collins
Assistant Field Supervisor

Mr. Peter J. Frantz

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cc: FHWA (Jon-Paul Kohler)
IDNR (Hamer)
CMFO (Wilson)